M. SC. (COMPUTER SCIENCE) SEM – I (CHOICE BASED CREDIT & GRADE SYSTEM) : WINTER - 2017

SUBJECT : ADVANCED DATA STRUCTURES

Day : Saturday
Date : 28/10/2017

Time : 03.00 PM TO 06.00 PM
Max. Marks : 60

W-2017-0818

N. B. :

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw neat and labelled diagram **WHEREVER** necessary.

Q. 1 Describe Linear Queue as an ADT. Write a C code to implement Linear queue using linked list. **(15)**

OR

What is meant by an AVL tree? Explain AVL tree with the help of suitable example.

Q. 2 **A)** Attempt **ANY ONE** of the following: **(08)**

i) Write an algorithm 'merge sort'. Explain merge sort technique using example.

ii) Define binary search tree and state its applications. Generate a binary search tree by inserting an integer in order given below -

50, 18, 64, 7, 21, 55, 93, 5, 8, 25, 62, 22

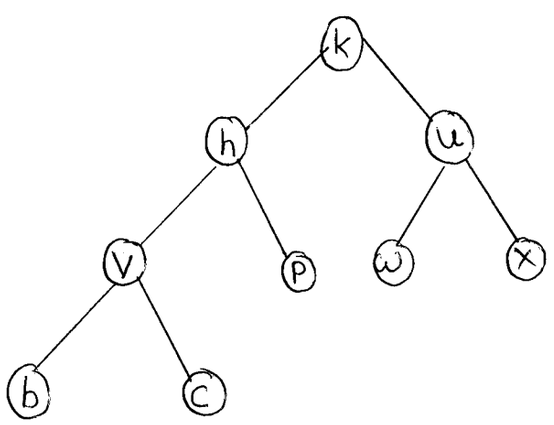
B) Attempt **ANY ONE** of the following: **(07)**

i) Construct the expression tree of algebraic equation :

a) $P + \left[(X + Y) * Z \right] - U / Q$

b) $A * B - C / D + E$

ii) Find the pre-order, post- order and in-order traversal of the following tree:



P. T. O.

Q. 3 Attempt **ANY THREE** of the following: **(15)**

a) What is hashing? Explain the concept of hash table.

b) Define minimum spanning tree. Explain the concept with suitable example.

c) Differentiate between Singly linked list and Doubly linked list.

d) Describe graph traversal methods in brief.

e) Explain dynamic arrays in detail.

Q. 4 Write short notes on **ANY THREE** of the following: **(15)**

a) Multiple stacks

b) Ordered lists

c) Applications of graph

d) Vectors

e) Infix to prefix conversion

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